

II. Amendments to the Claims

Kindly cancel Claims 2-10, 12 and without prejudice or disclaimer of the subject matter recited therein.

Kindly amend Claims 1, 11, 12, 33, and 34 as shown below.

1. (Currently amended) An optical radiation sensor device for detecting radiation in a radiation field ~~having a thickness~~, the device comprising:

a stationary radiation source;

a stationary radiation sensor element positioned to receive radiation from the radiation source;

a boundary element disposed between the radiation source and the radiation sensor element to define a thickness corresponding to the distance between the boundary element and the radiation source; and

motive means to alter the relative distance between the boundary element and the radiation source to thereby alter the thickness of the radiation field from a first thickness to a second thickness;

the sensor element capable of detecting and responding to incident radiation from radiation source at the first thickness and at the second thickness.

2. (Cancelled)

3. (Cancelled)

4. (Cancelled)

5. (Cancelled)

6. (Cancelled)

7. (Cancelled)

8. (Cancelled)

9. (Cancelled)

10. (Cancelled)

11. (Currently amended) The optical sensor device defined in claim 71, wherein the motive means alters the relative linear distance between the boundary element and the radiation source.

12. (Cancelled)

13. (Original) The optical sensor device defined in claim 1, wherein the motive means alters the thickness of the radiation field in a step-wise manner.

14. (Original) The optical sensor device defined in claim 1, wherein the motive means alters the thickness of the radiation field in a continuous manner.

15. (Original) The optical sensor device defined in claim 1, wherein the device is submersible in a fluid of interest.

16. (Original) The optical sensor device defined in claim 1, wherein the device is submersible in a liquid of interest.

17. (Original) The optical sensor device defined in claim 1, wherein the device is submersible in water.

18. (Original) A radiation source module comprising the optical sensor device defined in claim 1.

19. (Original) A fluid treatment system comprising the optical sensor device defined in claim 1.

20. (Original) A water treatment system comprising the optical sensor device defined in claim 1.

21. (Original) A water disinfection system comprising the optical sensor device defined in claim 1.

22. (Currently amended) A process for measuring transmittance of a fluid in a radiation field, the process comprising the steps of:

(i) ~~positioning a radiation source and a radiation sensor element in a spaced relationship to define a first thickness of fluid in the radiation field~~ disposing the optical radiation sensor device defined in claim 1 in the fluid;

(ii) generating radiation from the radiation source

(iii) detecting a first radiation intensity corresponding to radiation received by the sensor element at the first thickness;

(~~iv~~) altering the first thickness to define a second thickness;

(~~iv~~) detecting a second radiation intensity corresponding to radiation received by the sensor element at the second thickness; and

(vi) calculating radiation transmittance of the fluid in the radiation field from the first radiation intensity and the second radiation intensity.

23. (Cancelled)

24. (Cancelled)

25. (Cancelled)

26. (Cancelled)

27. (Cancelled)

28. (Cancelled)

29. (Cancelled)

30. (Cancelled)

31. The process defined in claim ~~27~~22, wherein Step (iii) comprises altering the relative linear distance between the radiation source and the radiation sensor.

32. (Cancelled)

33. (Currently amended) The process defined in claim ~~27~~22, wherein Step (iii) comprises altering the first thickness of the radiation field in a step-wise manner.

34. (Currently amended) The process defined in claim ~~27~~22, wherein Step (iii) comprises altering the first thickness of the radiation field in a continuous manner.

35. (Original) An optical radiation sensor device for detecting radiation in a radiation field generated in a fluid of interest, the device comprising:

a radiation source submersible in the fluid of interest;

a submersible first radiation sensor element positioned in the fluid of interest at a first distance from the radiation source; and

a submersible second radiation sensor element positioned in the fluid of interest at a second distance from the radiation source;

wherein: (i) the first distance is different from the second distance, (ii) the first radiation sensor element is capable of detecting and responding to incident radiation from radiation source at the first distance, and (iii) the second radiation sensor element is capable of detecting and responding to incident radiation from radiation source at the second distance.

36. (Original) A radiation source module comprising the optical sensor device defined in claim 35.

37. (Original) A fluid treatment system comprising the optical sensor device defined in claim 35.

38. (Original) A water treatment system comprising the optical sensor device defined in claim 35.

39. (Original) A water disinfection system
comprising the optical sensor device defined in claim 35.